

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
OAKLAND DIVISION

EPIC GAMES, INC.,

*Plaintiff, Counter-defendant,*

vs.

APPLE INC.,

*Defendant, Counterclaimant.*

No. 4:20-CV-05640-YGR-TSH

**WRITTEN DIRECT TESTIMONY OF  
DANIEL L. RUBINFELD**

Trial Date: May 3, 2021

Time: 8:00 a.m.

Courtroom: 1, 4th Floor

Judge: Hon. Yvonne Gonzalez Rogers

**Ex. Expert 9**

## I. Summary of Opinions

1. My testimony focuses on the technical and contractual restraints challenged by Epic. The testimony is informed by my experience analyzing the role of intellectual property (“IP”) in antitrust matters, including my service as chief economist for the Department of Justice during the period in the late 1990s when DOJ brought a monopoly maintenance case against Microsoft. My overarching conclusion is that the introduction of the iPhone and its App Store has generated substantial consumer benefits. Furthermore, the restrictions at issue in this case facilitated the introduction of these innovative products and were—and still are—crucially responsible for enabling the growth of the iOS ecosystem and the benefits that flow from it. Epic’s proposed remedies would weaken or eliminate the procompetitive benefits, depriving consumers of the valuable option to choose a platform that protects their security and privacy and the quality of their user experience.
2. **Opinion 1.** The technical features that Epic challenges, including the inability to sideload apps, were procompetitive design choices that Apple made when it launched the iPhone, and later, App Store—well before it could even be argued that Apple had monopoly or market power. These design choices continue to enhance product differentiation and consumer choice. (See section III.B, p. 5.)
3. **Opinion 2.** Apple’s App Store policies and rules, including the challenged restrictions, are integral to a procompetitive licensing agreement—the Developer Program License Agreement (“DPLA”). As an economist, my view—consistent with that of the antitrust agencies—is that once an owner of IP decides to license its IP, that owner has significant flexibility in choosing what rights it is willing to license and under what terms. (See section III.C.1, pp 6–8.)
4. **Opinion 3.** The challenged restraints are procompetitive vertical restraints because, among other purposes, they (a) assure the safety, security, and quality of experience for users, (b) prevent free riding, and (c) foster interbrand competition. The DPLA does not harm any horizontal competition that would have existed but for the DPLA. (See sections III.C.1, pp. 6–8, and III.C.2, pp. 8–10.)
5. **Opinion 4.** There is no economic foundation for Epic’s position that Apple has a duty to design its products and structure its policies, rules, and agreements in a manner that benefits other firms, including Epic. It is well recognized in competition economics that imposing such a duty would have adverse impacts on social welfare, including the fact it would erode incentives for investment and innovation. (See sections IV, pp. 13–15, V, p. 15, and VI, pp. 15–16.)
6. **Opinion 5.** Nothing in the testimony of Dr. Evans or Professor Athey changes my opinions summarized above. (See sections VII, pp. 16–18, and VIII, p. 18.) Both Dr. Evans and Professor Athey fail to acknowledge the importance of Apple’s IP related to the iOS platform. Each fails to appropriately credit the procompetitive IP-driven benefits that flow from Apple’s developer-related restrictions. The vague but-for worlds they describe would diminish, rather than enhance, competition. (See section VIII, p. 18.)
7. **Opinion 6.** There are serious economic risks associated with wrongly condemning procompetitive behavior, particularly in technology markets. Given the high volume and

rapid growth of the app economy, an erroneous condemnation of Apple's App Store policies could lead to substantial foregone benefits. (See section IX, pp. 18–19.)

## **II. Background and Qualifications**

8. I am the Robert L. Bridges Professor of Law and Professor of Economics Emeritus at the University of California Berkeley and Professor of Law at New York University. I served as Deputy Assistant Attorney General for Antitrust at the DOJ from June 1997 through December 1998. In that position, I was responsible for supervising a staff of approximately 70 Ph.D. economists, financial analysts, and research assistants with respect to a wide range of antitrust matters, including monopolization, price fixing, and other restraints of trade. As mentioned, of particular note was my role as chief economist in the monopoly maintenance case brought against Microsoft.
9. I received my A.B. degree in mathematics from Princeton in 1967 and my Ph.D. in economics from M.I.T. in 1972. I have previously taught at the University of Michigan and have been a Visiting Professor at a wide range of law schools. My current teaching experience at NYU Law includes antitrust law and economics and quantitative methods in law; my antitrust seminar covers, among other things, the economic analysis of IP and antitrust.
10. I am the coauthor of two textbooks, *Microeconomics* and *Econometric Models and Economic Forecasts*, and have published or edited eight books and over 150 articles. I have received fellowships from the National Bureau of Economic Research, the John M. Guggenheim Foundation, and the Center for Advanced Studies in the Behavioral Sciences. I am a past President of the American Law and Economics Association. I am a current Fellow of the American Academy of Arts and Sciences and a Fellow of the National Bureau of Economic Research.
11. I have consulted and testified extensively on antitrust, intellectual property, public regulation, and damages issues, for private parties and for the DOJ and Federal Trade Commission.

## **III. The Challenged Technical and Contractual Restrictions Are Procompetitive**

12. In my opinion, the restraints that Epic challenges are crucially responsible for enabling the growth of the iOS ecosystem and the benefits that flow from it. To understand why, I offer a brief review of the historical development of the iPhone and its App Store.
13. When the App Store was first announced in March 2008, the arrangement offered to developers was simple. The developer would choose the price to charge the user to download the app (which could be zero). The user would pay Apple, which hosts and delivers the app and bears responsibility for the transaction. Apple would then pay the developer 70 percent of the purchase price and keep 30 percent for itself. When acquiring the app is free, Apple would receive no initial compensation.
14. This business model has remained essentially in place to this day, apart from refinements and changes that have often benefited developers. For instance in March 2009, Apple introduced post-sale “in-app purchases.” Initially limited to paid apps, in-app purchases eventually allowed a developer to offer a free trial version of an app that could easily be upgraded to full functionality with an in-app purchase. This advancement also gave more

flexibility to apps with a subscription model: the initial download no longer required a positive price. Apple has also cut its commission rate—or removed the commission requirement altogether—for certain transactions.

15. A central component of this business model is that Apple grants developers access to its IP, in order to allow them to create native iOS apps. This has allowed even the smallest developers to reach millions of iOS users, while iOS users got access to more and better apps—including many free apps. Without access to Apple's IP, the app economy could not have flourished as it has.

**A. The iPhone and App Store have generated substantial consumer benefit**

16. In the 14 years since the launch of the first iPhone, the resulting iOS ecosystem has generated significant benefits for users of iOS devices, for developers of iOS apps, and for society more broadly through the growth of the “app economy.”
17. The iOS ecosystem has undeniably had an important economic impact. Since the App Store's inception, Apple has distributed more than \$155 billion in earnings to developers from paid app downloads and in-app purchases. The economic impact is even larger when considering other revenue streams earned by developers (e.g., advertising and the sale of physical goods). One study estimates that the App Store ecosystem generated more than \$138 billion in U.S. commerce in 2019.
18. Each new product introduction—whether that product is altogether new or differentiated to some degree from the products previously available—expands the set of products from which consumers can choose. Such an expansion of consumers' choices almost always benefits consumers. A consumer for which the new product is not superior to those already available can ignore the existence of the new product. But a consumer that values the new product greater than those previously available sufficiently to purchase it clearly benefits from the availability of the new product. Economic theory and practice tell us that the introduction of new products is procompetitive because it is beneficial to some and neutral to others.
19. The introduction of the iPhone and the App Store is no exception. Indeed, it is widely recognized by economists that the introduction of new products such as the iPhone and the App Store has generated substantial increases in consumer welfare.
20. But, creating a new product involves creating a new design with a distinctive combination of features and characteristics. Innovating firms are and should be given great deference concerning how they design new products, subject of course to health, safety, environmental, and other regulations. This is particularly true where, as here, the design features and challenged restraints were implemented by Apple prior to it having the market/monopoly power it is now accused of having.
21. Creating a new product is typically expensive, requiring a substantial investment of capital, time, and other opportunity costs. Innovating firms have an incentive to innovate wisely—to design products that will be perceived by customers as valued and superior to other available choices. Ultimately, the market will be the best judge of whether the firm's innovation decisions were wise or a failure.

22. Given the inherent risk involved in innovating to develop new products, innovation could be substantially chilled if a prospective innovator believed that her legitimate product-design decision would later be second guessed. Economists understand the importance of encouraging product-design innovation. With this background in mind, I will explain why the technical and contractual restrictions that Epic has challenged are pro- rather than anti-competitive.

**B. The challenged technical restrictions are procompetitive**

23. The technical features that Epic challenges—principally the inability to sideload apps—were original design features of the iPhone, iOS, and the App Store upon their respective product introductions. When the iPhone was introduced in early 2007, it was not designed to enable or facilitate sideloading. This was a design decision made before Apple expected to have an App Store offering third-party apps. Once Apple made the decision to create the App Store, it did not change this decision—for reasons explained at the time, including protecting the reliability and security of the device and the user. Apple also made the further decision to preinstall the App Store iOS app on the iPhone without an option to delete.
24. The challenged technical restrictions are procompetitive. The introduction of a new product with distinct features serves a procompetitive purpose because it expands the scope of consumer choice. Apple’s design choice to not facilitate sideloading, i.e., to create a “walled garden,” was made before the first iPhone was sold and before Apple sold a single app through the App Store, supporting my view that this design choice is procompetitive.
25. This conclusion flows from the general economic principle that a practice used by a firm without antitrust market power is likely procompetitive. The economic reasoning is that a firm without antitrust market power, or a dangerous probability of achieving that, is likely to be motivated by a desire to be a more effective competitor. This may harm a competitor, but it will not harm the competitive process. Dr. Evans himself recognized this principle when he argued that, because tying occurs in competitive markets, it “presumptively occurs because it is efficient.”<sup>1</sup>

**C. The challenged contractual restrictions are procompetitive**

26. To create a native iOS app for Apple-branded products, a developer uses Apple software and tools and other IP provided under Apple’s Developer Program to develop and test the app. To obtain a license to develop apps that use the Apple software, the developer must enter into the Apple Developer Program Licensing Agreement (“DPLA”). The DPLA defines the services provided to developers and crucially enables the use of Apple software, SDKs, APIs, and other tools for third-party participation in the iOS app ecosystem.
27. The DPLA also requires an app developer to agree to various obligations, some of which are at issue in this case. These obligations are clearly spelled out in the DPLA. In particular, the DPLA provides that apps developed using Apple software may be distributed only through

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<sup>1</sup> David S. Evans and Michael Salinger, “Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law,” *Yale Journal on Regulation*, 22(1), 2005, 37–89 at 39.

the App Store and in Apple's discretion. Epic and Dr. Evans claim this restraint is anticompetitive.

**1. The challenged restraints are integral to procompetitive licensing arrangements**

28. In my view, the challenged contractual restraints make possible the combination of complementary assets in a pro-competitive vertical relationship between Apple and developers.
29. It is essential to view these restrictions with reference to the opinions that have been promulgated by our competition authorities. The DOJ and FTC Antitrust Guidelines for the Licensing of Intellectual Property ("IP Guidelines") reflect the antitrust enforcement policy of the U.S. agencies "with respect to the licensing of intellectual property protected by patent, copyright, and trade secret law, and of know-how."<sup>2</sup> These Guidelines reflect the application of sound economic analysis to these policy issues. Applying the IP Guidelines framework to the DPLA shows that the DPLA is procompetitive. Importantly, the challenged restraints are integral to this procompetitive licensing arrangement.
30. For background purposes and as a threshold matter, the IP Guidelines acknowledge that:<sup>3</sup>
- "Intellectual property law bestows on the owners of intellectual property certain rights to exclude others. These rights help the owners to profit from the use of their property."
  - "The antitrust laws generally do not impose liability upon a firm for a unilateral refusal to assist its competitors, in part because doing so may undermine incentives for investment and innovation."
31. In my view as an antitrust economist, I believe that licensing IP is generally procompetitive, allowing firms to combine complementary factors of production. The IP Guidelines makes this clear, stating as a general principle that "intellectual property licensing allows firms to combine complementary factors of production and is generally procompetitive."<sup>4</sup> In this case, Apple owns the relevant IP. This linkage of the procompetitive benefits of licensing to combining complementary factors of production is exemplified by the license Apple grants to developers through the DPLA. Third-party developers are "complementary factors of production" and Apple, as the owner of its IP, "finds it most efficient to contract with others for these [complementary] factors."<sup>5</sup>
32. In other words, by virtue of its ownership of crucial IP, Apple could have chosen to be the exclusive developer of iOS apps for the iOS ecosystem. Indeed, that was Apple's original decision when it launched the iPhone. But—as Apple quickly realized—such a choice would have failed to maximize the potential of the iOS ecosystem. Third-party developers collectively have a broader range of ideas, exposure to the needs of diverse (sometimes niche)

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<sup>2</sup> DOJ & FTC, "Antitrust Guidelines for the Licensing of Intellectual Property," 2017 (hereafter "IP Guidelines"), § 1.0.

<sup>3</sup> IP Guidelines, § 2.1

<sup>4</sup> IP Guidelines, § 2.0.

<sup>5</sup> IP Guidelines, § 2.3.



groups of consumers, their own IP rights, and skills and talents than Apple could ever assemble solely within its corporate boundary. By choosing to license its IP to third-party developers, Apple has created an “integration [that] can lead to more efficient exploitation of the intellectual property, benefiting consumers through the reduction of costs and the introduction of new products. Such arrangements increase the value of intellectual property to consumers and owners.”<sup>6</sup>

33. As an additional procompetitive benefit to licensing, according to the Guidelines, “[l]icensing can allow an innovator to capture returns from its investment in making and developing an invention through royalty payments from those that practice its invention, thus providing an incentive to invest in innovative efforts.”<sup>7</sup>
34. Once an IP owner—here Apple—decides to license its IP, it has great flexibility in choosing precisely what rights it is willing to license and under what terms. The IP Guidelines acknowledge what antitrust economists see as the procompetitive role of restraints on licensees embodied in IP licenses, including limitations on fields of use and distribution. Such restraints “may also increase the licensor’s incentive to license, for example, by protecting the licensor from competition in the licensor’s own technology in a market niche that it prefers to keep to itself.”<sup>8</sup>
35. Thus, the IP Guidelines explicitly recognize that licensing IP need not be an “all or nothing” proposition but instead is a matter amenable to considerable refinement and nuance.
36. The fact that an IP owner attaches conditions to a license—a ubiquitous practice blessed by the IP Guidelines—does not suggest that somehow the IP owner is conducting some kind of exclusionary “conditional refusal to deal” simply because the IP owner is only conditionally willing to license IP that it is under no obligation to license in the first place.
37. Although licensing IP is “generally procompetitive,” it is not immune from antitrust scrutiny. Indeed, when investigating Microsoft in the late 1990s, the Antitrust Division of the DOJ found (and the Court eventually agreed) that certain OEM (original equipment manufacturer) license arrangements were anticompetitive. According to the IP Guidelines a licensing arrangement may raise antitrust concerns when it: “harms competition among entities that would have been actual or potential competitors in a relevant market in the absence of the license”—i.e., entities in a “horizontal relationship.”<sup>9</sup> Typically, the relationship between Apple and a developer is vertical, not horizontal, because the typical third-party app does not compete with any specific Apple app. For developers in a purely vertical relationship with Apple, the DPLA cannot restrain any competition that would occur in the absence of the DPLA.
38. Of course, it is possible that a developer’s native iOS app could compete with an Apple app—as Apple acknowledges that some third-party apps do. But, the developer must still enter into the DPLA to develop, distribute, and sell its native iOS app. Entering the DPLA is a

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<sup>6</sup> IP Guidelines, § 2.3.

<sup>7</sup> IP Guidelines, § 2.3.

<sup>8</sup> IP Guidelines, § 2.3.

<sup>9</sup> IP Guidelines, § 3.1.

necessary condition for the developer's *iOS app* to compete with Apple's. Apple and such third-party developers of native iOS apps would not "have been actual or potential competitors in a relevant market in the absence of the license." Put another way, Apple's decision to license its IP in the first place pursuant to the DPLA creates competition that would not exist but for that licensing arrangement. Thus, for these less-typical developers whose apps compete with Apple apps or who claim to be potential distributors of iOS apps developed using Apple's software, the DPLA also does not restrain any competition that would occur in its absence.

39. This argument—that there is no competitive concern even when a developer's app competes with an Apple app—applies to Epic's desire to compete with Apple with its own app-store app distributed on the App Store, because an app-store app is itself an app.
40. I do not understand Epic to be alleging that Apple does not hold relevant IP or that Epic does not require a license to Apple's IP in order to develop and distribute iOS apps. Indeed, Epic has stated that it has no right to use Apple's services independent of the rights granted by the DPLA. Of course, if Epic (or any other developer) did not require a license from Apple to use Apple's IP, or did not need to use Apple software to develop, test, and run their iOS apps, then the terms of the DPLA would not restrain its actions.
41. In their reports submitted to this Court, both Dr. Evans and Professor Athey criticize certain provisions of the DPLA. However, their reports fail to consider that Apple's IP gives Apple the right to exclude others from use of that IP absent an Apple license. Furthermore, neither Dr. Evans nor Professor Athey has performed an antitrust analysis of Apple's DPLA that takes Apple's IP into account. Neither asserts that the DPLA harmed horizontal competition that would have existed in the absence of the license.

**2. The restraints are procompetitive vertical restraints that prevent opportunism and free riding and foster competition between platforms**

42. The license terms that affect how third-party apps are distributed on iOS devices are appropriately described as vertical restraints because Apple and the typical developer provide *complements* that are combined via the iOS ecosystem. On the one hand, Apple provides the "infrastructure"—the device, the operating system, the App Store, and many related services. On the other, the developer provides an app with features and characteristics that work in tandem with the other components of Apple's ecosystem.
43. Vertical restraints are common in contractual arrangements without regard to whether parties have market power. This by itself indicates that vertical restraints often serve economic efficiency and often are procompetitive. Although the term "vertical restraint" emphasizes that the provision *restrains* a party from doing something it might otherwise do if not so restrained, the crucial flip side is that the contractual relationship thereby *enables* a mutually beneficial arrangement—one where the party that voluntarily accepts the restraint is made better off by the arrangement than it would be without the arrangement and the restraint. For example, a restraint that requires downstream entities to maintain high quality standards is costly to each downstream entity. However, the fact that all other downstream entities maintain high quality could increase the value of the platform so much that all downstream



entities are benefitted even net of each downstream entity's costs of compliance with the restraint.

44. A frequent goal of a vertical restraint is to inhibit what economists refer to as *opportunistic behavior*, by which one party would otherwise—but for the vertical restraint—take actions that are privately beneficial to the performer but harmful on net to the joint enterprise—so much so that allowing the opportunistic behavior is inefficient because it reduces the joint surplus.
45. One common and well-studied form of opportunistic behavior is “free riding.” A canonical example is a pair of retailers, one with a high level of service to consumers and the other with a low level of service. Customers could take advantage of information available from the high-service retailer to determine what brand of equipment to purchase, but consummate the purchase at the lower price available at the low-service retailer. The low-service retailer would thus free ride on the services of the high-service retailer by benefitting from them without paying for them. The prevention of free riding is widely recognized by economists and courts as a procompetitive justification for vertical restraints.
46. The vertical restraints challenged by Epic serve that very purpose. Suppose that Apple could no longer enforce its policies that all native iOS apps written using Apple-licensed software and tools be available only through the App Store. In this but-for world, there would be an incentive for a rogue developer to create and distribute outside of the App Store an alternative app store that exercised little or no oversight, permitting the distribution and installation of apps that are buggy, are insecure, install malware, harvest users' private data, cause excessive battery drain, hog bandwidth, or any combination of these. This rogue app store likely would exercise too little oversight for several reasons. For one thing, oversight is costly to perform, and a rogue app store would not internalize in its private incentives the broad array of benefit and costs across the entire iOS ecosystem, as Apple rationally does. For another, the rogue app store would lack the specialized expertise Apple has to exercise such oversight effectively. These rogue app stores are analogous to the low-service retailer I just described.
47. Users that installed the rogue app, and were harmed or otherwise had a poor user experience, could not necessarily trace their displeasure back to the rogue app specifically, or to the rogue app store, but may attribute the problems more generally to Apple. Going forward, these users would attach a lower level of expected quality and safety when, among other things, considering whether to install new apps from the App Store, whether to invest in new iOS devices or even whether to stay within iOS at all.
48. There are two senses in which this rogue developer would be free riding—both occurring simultaneously and having the same adverse effect on Apple as well as other developers:
  - The rogue developer would be free-riding on Apple's innovation and investments that created, continually improves, and maintains its iOS devices, its tools for the iOS platform, the iOS operating system, and the App Store (along with its policies and rules) that creates a large installed base of iOS devices and users and generate a high demand from iOS users for iOS apps.

- The rogue developer would be free-riding on other developers that create safe, secure, high quality apps and otherwise conform with developers' responsibilities under the App Store policies and rules, because the costly actions of conforming developers also help establish and maintain the valuable reputation of the iOS ecosystem.
49. The effects of the rogue developer's behavior include:
- The rogue developer would receive as a private benefit the incremental lift in demand for its app that would flow from the large installed base and high reputation of the iOS ecosystem.
  - The reputation of the entire iOS ecosystem, and of all the apps distributed on it, would be harmed by the bad experiences by users of the rogue app. This harms the value of the iOS ecosystem to Apple, all developers, and users.
50. Alternatively, suppose the rogue app would have passed App Store review but was instead distributed outside the App Store. In that case, the rogue app free rides on the large installed base and high reputation of the iOS ecosystem caused both by Apple's innovations and the costly actions of conforming developers. The rogue developer gains the private benefits of that free riding but deprives Apple of the commission it charges unless Apple is permitted to charge a commission on transactions that occur outside of the App Store.
51. Free riding is of particular concern when the agreements at issue involve intellectual rather than contractual property rights. The problem is that IP rights can be appropriated relatively easily. And, if the innovator cannot effectively exclude others from copying or otherwise making use of the invention for free, some of the returns from the innovation will be lost, with the expectation that there will be less innovation.
52. Apple's in-app purchase mechanism ("IAP") also prevents developers from free-riding on Apple's IP. Developers bypassing IAP would in effect exploit Apple's historical innovations and investments while avoiding paying the remuneration that an IP holder is entitled to collect. This would chill Apple's incentive to make similar investments and innovation in the future—to the detriment of consumers and developers.
53. Vertical restraints tend to foster *interbrand* competition, which in the present context might be more clearly named *inter-platform* competition. Promoting interbrand competition is a primary concern of antitrust economists such as myself.

**D. The challenged technical and contractual restrictions work together to serve procompetitive goals by protecting iPhone users' security, privacy, and quality of experience**

54. The challenged technical restrictions are complementary to—and work together with—the challenged contractual restrictions to protect iPhone users' security, privacy, and quality of experience. First, the challenged contractual restrictions assure the safety and quality of the apps available from the App Store. Second—and relatedly—the challenged technical restrictions inhibit developers from circumventing the protections of the App Store.

55. The app-review process and the App Store Review Guidelines benefit Apple, iPhone users, and developers. They benefit users by ensuring that users have a good experience with any apps they download from the Store. And they benefit developers because each developer benefits from the review of all *other* developers' apps. By improving the overall quality of available apps, the App Store performs a certification function. It assures users that any particular developer's app will likely be compatible with the user's device and version of the operating system and likely will not be hazardous, be unpleasant, harm the performance of the user's device, or create a threat to the user's privacy. This App Store review and approval process makes users more likely to purchase the developer's app.
56. This instills trust: iOS users know that when they transact on the App Store, they are using a reliable and secure platform and will receive a product that has been vetted to meet Apple's high standards. This consumer confidence in turn enriches the App Store ecosystem (and developers) as they are more prone to download, use, and pay for developers' apps.
57. A corollary of this principle is the converse: Any developer that would be allowed to circumvent Apple's app review process potentially harms all *other* developers (and therefore Apple itself) because users' confidence in all iOS apps can be undermined by bad experiences with apps from the circumventing developer.
58. Lastly, the app-review process and the App Store Review Guidelines benefit Apple by fostering positive perceptions of the iOS ecosystem that likely result in greater sales of iPhones and iPads as well as related services.
59. The safety, security, privacy, and usability delivered by the App Store—including as a result of its policies and rules—provide consumers a valuable, differentiated option from the Android platform. This drives competition between iOS and Android platforms.

**E. Dr. Evans wrongly believes that Apple's restrictions and policies are unnecessary and not procompetitive**

60. I understand Dr. Evans may opine that Apple's restrictions and policies regarding the App Store are unnecessary and not procompetitive. Such opinions would conflict with his prior writings.
61. For example, Dr. Evans previously acknowledged the need for digital platforms to "have platform rules that prohibit or require certain behavior" to deter participants "from [b]ehaving [b]adly" in ways that reduce the value of the platform to its members. In particular, Dr. Evans has stated that such rules allow the platform to "impose penalties for breaking the rules as well as screening methods for keeping bad actors off the platform."<sup>10</sup>
62. Indeed, less than a year before he filed his report, Dr. Evans praised Apple's rules governing distribution of iOS apps and the app-review process in an article he wrote, stating:<sup>11</sup>

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<sup>10</sup> David S. Evans, "Vertical Restraints in a Digital World," *Competition Policy International*, December 2020, at 5–6.

<sup>11</sup> Evans, "Vertical Restraints in a Digital World," at 13.

There isn't much controversy that Apple's rules have enabled it to create a high-quality app ecosystem for the iPhone.

63. Dr. Evans acknowledges that Apple policies and rules he criticizes were design decisions integral to the iPhone and iOS platform.<sup>12</sup> But, he says, Apple “did not have to block all channels of distribution, other than its own to create value for iPhone users and app developers.”<sup>13</sup>
64. Dr. Evans is wrong. An alternative iOS app store would allow iOS users to download and install native iOS apps that were not subject to Apple's app review and therefore did not pass Apple's criteria that exist to ensure users' safety, privacy, and quality of experience on iOS. In other words, an alternative iOS app store would allow developers to circumvent Apple's procompetitive role in assuring safe, high-quality apps could be installed on users' devices. Alternative app stores would be likely to exercise too little oversight for several reasons, including that such oversight is costly to perform while only Apple has the incentives to internalize the broad array of benefit and costs, across the entire iOS ecosystem, to screen apps with sufficient vigilance. Indeed, Apple would possibly need to resolve various disputes with third-party app stores and may even need to revoke their licenses and engage in litigation (as it is doing with Epic). These would be additional costs imposed on Apple.
65. Apple's control over what types of apps can and cannot be installed on users' iOS devices contributes to the value of the iOS ecosystem to consumers and hence is procompetitive. With respect to this quality concern, I have found the testimony of Dr. Aviel Rubin to be informative. Dr. Rubin explains that purveyors of malware and pirated applications take various measures to evade Apple's app review. For example, if an app is rejected, the developer may try to submit that app in another language, or modify some behavioral aspect of the app. An alternative iOS app store would create a whole new outlet for the distribution of rejected apps. It is the design of the iPhone and the App Store, and the licensing terms of the DPLA, and Apple's enforcement of its policies and rules thereunder that create the benefit of a high quality, secure, safe, and privacy respecting experience for users. The alleged restrictions are procompetitive because they are integral to the delivery of the procompetitive benefits to users and developers.
66. That similar policies have been adopted on several other “closed” platforms further suggests that those policies are procompetitive. As the Court previously noted, Sony, Nintendo and Microsoft all operate similar walled gardens or closed platform models as Apple, whereby the hardware, operating system, digital marketplace, and payment system are controlled by the platform owner.
67. Dr. Evans also errs in claiming that, even absent Apple's App Store rules and policies, there would be no free riding on Apple's innovation because Apple benefits from having third-party apps on its platform by selling more iPhones. Dr. Evans appears to assert that the unquantified contribution of third-party apps to Apple's iPhone sales is necessarily sufficient compensation to Apple to provide Apple with optimal incentives for investment. But the fact

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<sup>12</sup> Evans Direct Testimony ¶¶ 94-101.

<sup>13</sup> Evans Direct Testimony ¶ 299.

that two parties jointly contribute to the creation of a surplus does not imply that their individual contributions are necessarily equal and offsetting.

68. As the owner of its IP, it is Apple's decision how to create incentives for developer engagement that optimize the value of the platform. Apple could have chosen to call the developers' contribution to the platform sufficient and charge no commission to anyone; it did not. Apple could have decided that developers' contributions to the value of the platform were so great that Apple would pay developers to create apps; it did not. Apple could have chosen to assess a commission on a broader range of apps; it did not. Instead, Apple chose to set a commission structure—which has been in place largely the same since the App Store was founded, with the exception of changes that reduced commission rates in some cases. It was Apple's choice to have made and Apple's choice to continue to refine. Apple has the greatest stake in the consequences of that choice and the greatest incentive to get it right.
69. Dr. Evans also suggests that Apple is obligated to allow distribution of apps on the iPhone in all the same ways that apps can be distributed on the Mac or Windows, platforms that launched decades earlier on very different devices. Although Dr. Evans describes how other firms have made different business model choices in different circumstances than Apple, the choice of business model is an important dimension of competition and there should be no presumption that the old ways are the best ways or that a firm needs to justify choosing something new. The fact that Apple's choice to create and adopt a new business model (the App Store) has been so successful illustrates the value of business model innovation.
70. In any case, the way third-party apps have been distributed on the Mac is not a benchmark for how Apple should allow third-party apps to be distributed on iOS. There are significant differences between the macOS and iOS platforms, including their history (Mac launched in 1984, the iPhone in 2007), how the devices are used, the range of sophistication of the users, the sensitivity of the information carried on them coupled with the relative vulnerability to theft and loss, and the number of apps users download. It would be chilling if Apple were prohibited from learning, adapting, and changing in response to two decades of experience, to the evolution of computing, cybersecurity, and telecommunications since that time, and to the different ways in which users utilize different devices.

#### **IV. There Is No Economic Basis to Impose a Duty upon Apple to Redesign the iPhone and App Store**

71. An inherent premise of Epic's challenges to the alleged technical and contractual restrictions is that Apple has a duty to design its products and to structure its policies, rules and agreements in a manner that benefits other firms, including Apple's competitors (assuming Epic to be a competitor) and that such conduct can be considered anticompetitive rather than beneficial to competition. In my opinion, imposing a duty to redesign the iOS ecosystem does not make economic sense.
72. The economic literature about a duty to deal warns about the dangers of imposing on one firm a duty to aid its competitors. For example, Professor Dennis Carlton (a former Deputy Assistant Attorney General for Economics at DOJ) highlights the fundamental economic tension between the goals of antitrust and a duty to deal: "[A]ntitrust laws are premised on the simple notion that rivalry among firms benefits consumers, yet a doctrine of a duty to



deal clearly limits that rivalry.” Because, Professor Carlton explains, it is difficult to distinguish exclusionary behavior from beneficial competition (as both can involve one firm’s sales increasing at the expense of another’s), “[o]veraggressive use of antitrust claims against exclusionary conduct” will “inevitably reduce the incentive for beneficial competition.”<sup>14</sup>

73. From my perspective the but-for worlds of both Dr. Evans and Professor Athey in essence argue for imposing a duty to deal upon Apple because each would impose a duty upon Apple to admit developers, third-party app stores, and third-party payment processors into the App Store, the iOS platform, or both, on terms not chosen by Apple. Dr. Evans acknowledges that this case involves “Apple’s decision to make the App Store the *only* way to distribute apps.” The duty Epic and its experts would impose upon Apple is more than the usual duty to deal; it would include a duty to redesign the iPhone—both the hardware and software of which are covered by Apple’s IP—to make the iPhone interoperable with alternative app stores and with apps that would not qualify under Apple’s app-review guidelines for distribution through the App Store.
74. It is well recognized by competition economists (often in reacting to antitrust cases) that imposing a duty to aid one’s competitors would have adverse impacts on social welfare. For one thing, it would erode ex ante incentives for investment and innovation. For another, it could compel cooperation between rivals (which could shade into collusion) and it could entail ongoing oversight and regulation by courts.
75. From an economic perspective, second-guessing a firm’s product design should be viewed with suspicion, even if it happens to render rival products (or services) incompatible. Requiring the innovator to alter the product design—for example, for interoperability—risks imposing substantial costs on existing customers and is likely to discourage future design innovation.
76. These are all concerns that arise from Epic’s claims here. Imposing a requirement that Apple allow software developers that use Apple software to distribute native iOS apps outside the App Store would reduce Apple’s incentive to invest in developing its App Store. As explained, that would allow free riding and, more broadly, would reduce Apple’s incentive to engage in innovation-driven research and development. Imposing a duty to deal on Apple would also leave open the possibility of costly disputes over the exact terms of the dealing requirement. In the end, such a duty would likely require some form of costly continuing oversight.
77. It is appropriate for an innovator, particularly one that seeks to create an entirely new device (the iPhone) and platform (the App Store), to make the design decisions it thinks best for the success of that new device and platform. Any distortion in those design decisions necessitated by a duty to deal would represent a lost benefit for Apple (or Apple would have chosen such a path in the first instance).

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<sup>14</sup> Dennis W. Carlton, “A General Analysis of Exclusionary Conduct and Refusal to Deal—Why *Aspen* and *Kodak* Are Misguided,” *Antitrust Law Journal*, 68(3), February 2001, 659–83, at 659–60.



78. Thus, imposing such a duty on Apple to redesign its successful iPhone and App Store would both (a) risk harming current and future iPhone users by virtue of having a less safe and secure iOS ecosystem and (b) harm incentives for innovating firms that are contemplating the design of new products.
79. I offer no legal opinions here, but as a competition economist I conclude that Apple's decisions not to design the iPhone and iOS with a sideloading option and not to license developers who use Apple software to bypass the App Store are not a reversal by Apple of some conduct in which Apple had earlier voluntarily and profitably engaged.

**V. There Is No Economic Basis to Impose Compulsory Licensing on Apple**

80. A particular consequence of both Dr. Evans's and Professor Athey's but-for worlds is that Apple would be compelled to license its IP in ways it otherwise would not. From an economics perspective, however, imposing duties on Apple to design its innovations and to license its IP in specified ways is anticompetitive.
81. Dr. Evans's prior writings on this subject are informative. Dr. Evans has opined that it is "close to impossible" to accurately balance the welfare-increasing and welfare-decreasing effects of compulsory licensing, such that "[i]n general, in the absence of any positive effects on innovation, compulsory licensing is likely to have an overall negative impact on welfare."<sup>15</sup>
82. And Dr. Evans is not alone in fearing that compulsory licensing would reduce economic welfare. Two prominent antitrust economists, Professors Richard Gilbert and Carl Shapiro—who, like me, are past Deputy Assistant Attorneys General for Antitrust at the DOJ—have explained that compulsory licensing "can also reduce welfare in the long run by reducing incentives for innovation." They describe the long-run effects of an obligation to deal as "profound adverse incentives for investment and for the creation of intellectual property" and that this "is reason enough to justify skepticism toward policies that call for compulsory licensing."<sup>16</sup>
83. Finally, from my perspective, Professor Athey's discussion of counterfactual alternative distribution structures is no more than an academic exercise because she fails to acknowledge that Apple's IP gives Apple control over how apps created with Apple-licensed software may be distributed.

**VI. The Claim that Apple Controls an "Essential Facility" Would Raise Similar Concerns to Duty to Deal and Compulsory Licensing**

84. It is unclear whether either Dr. Evans or Professor Athey believe that Apple is denying Epic access to an "essential facility," as Epic asserts in its Complaint. Dr. Evans does not mention

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<sup>15</sup> Christian Ahlborn, David S. Evans, and A. Jorge Padilla, "The Logic & Limits of the Exceptional Circumstances Test in Magill and IMS Health," *Fordham International Law Journal*, 28(4), 2004, 1109–1156, at 1137–1138.

<sup>16</sup> Richard J. Gilbert and Carl Shapiro, "An economic analysis of unilateral refusals to license intellectual property," *Proceedings of the National Academy of Sciences*, 93(23), November 12, 1996, 12749–55, at 12753–54.

“essential facility” in his testimony and appears not to adopt this claim. Dr. Evans also does not claim that Apple has a monopoly over mobile operating systems or mobile devices, which I understand to be the alleged essential facility, according to Epic.

85. Just to be clear, iOS is the operating system for Apple’s iOS devices and is subject to IP protection. If the essential facility doctrine is governed by the same principles that govern the creation of duties to aid competitors, its application here would be subject to the same concerns and economic objections I have identified above. And if the doctrine goes beyond those principles, from the perspective of competition economics, the application of the concept of an essential facility would be at best suggestive of the imposition of a regulatory regime. It would be inappropriate to apply such an “essential facility” doctrine to IP.
86. An antitrust law and economics commentator, Herbert Hovenkamp, has described the so-called essential facility doctrine as “one of the most troublesome, incoherent and unmanageable of bases for Sherman § 2 liability.”<sup>17</sup> Professor Hovenkamp concludes that “the essential facility doctrine discourages competitive investment and is best left to regulatory policy rather than antitrust law.”<sup>18</sup>
87. In this regard, it is useful to recollect that despite Microsoft’s monopoly over its Intel-based operating system (“OS”) market, in its 1998 filing, the DOJ did not claim that the Microsoft OS was an essential facility. Since then, observers such as Gregory Sidak and Abbott Lipsky have concluded that it would have been inappropriate to characterize the Microsoft OS as an essential facility. The essential facilities doctrine can be seen as an equivalent to the economic concept of a natural monopoly. The implication is that managing the facility would involve administrative complexity, while attempts to restrain Microsoft through regulation would likely be ineffective.

## **VII. Professor Athey’s Analysis Does Not Advance the Economic Analysis of This Case**

88. Professor Athey posits an alternative world with one or more “Multi-platform App Stores” that she asserts is advantageous because of allegedly lower switching costs for consumers and developers.
89. Indeed, Professor Athey claims her Multi-Platform App Stores would lead to an improvement in welfare for users, but she does not acknowledge or analyze the myriad of other consequences that would flow from the assumed change in Apple’s policies and rules concerning the App Store. For example, Professor Athey does not refer in her written testimony to either security or privacy. She also ignores the role of Apple’s IP.
90. In this section, I explain why Professor Athey’s focus on reducing switching costs—while ignoring Apple’s IP rights and the procompetitive benefits of Apple’s design of the iPhone and App Store policies—should be given little, if any, weight.

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<sup>17</sup> Herbert Hovenkamp, *Federal Antitrust Policy, The Law of Competition and Its Practice* (6th Edition), 2020 (hereafter “Federal Antitrust Policy”), at 401.

<sup>18</sup> Federal Antitrust Policy, at 382–383.

**A. Switching costs are consistent with, can intensify, and can be manifestations of competition**

91. Although Professor Athey acknowledges the existence of a substantial economic literature regarding switching costs, she did not rely upon that literature when forming her opinions in this case and ignores that literature in claiming—without basis—that lower switching costs necessarily result in more competition.
92. In fact, switching costs can intensify competition—even when switching costs are significant. The intuition is that a customer, once acquired, is particularly valuable when there are switching costs. This causes firms to compete more vigorously to acquire new customers by making more-enticing offers. To give an example: Not long ago, mobile-phone customers commonly signed a two-year contract with a carrier. This created a switching cost if the consumer wanted to switch carriers before the contract term expired. Mobile carriers intensely competed to win customers, for example, offering free or heavily subsidized phones. They did this precisely because a customer with a signed contract, and therefore significant switching costs, was a particularly valuable convert.
93. Professor Athey has performed no analysis to show that the switching costs are sufficiently high that their reduction would increase competition; indeed, she has not acknowledged that this question is critical to her opinion. The impact of switching costs on equilibrium prices is an empirical question, but Dr. Athey has not conducted that empirical analysis.

**B. Professor Athey fails to show that claimed reductions in developer and other switching costs would increase competition between existing platforms or lead to the emergence of new ones**

94. Professor Athey also fails to show that the decrease in switching costs she posits would result from the existence of more “multiplatform app stores” would increase competition between existing or new platforms.
95. The one concrete developer cost Professor Athey identifies as a “friction” is the fixed cost required “invest in the infrastructure to offer account management that would recognize a given user across platforms.”<sup>19</sup> Professor Athey offers no quantification of such costs and fails to show they are large or material to a developer’s decision as to whether to launch an app on a platform.
96. The reality suggests they are not. If these cross-platform developer costs were as significant to developers’ decisions on what platforms to launch their apps as Professor Athey seems to suggest, one would expect to see many important apps developed for only iOS or only Android for that reason. This is not the case.
97. Professor Athey also does not explain how a multi-platform app store would materially decrease cross-platform developer costs. The costs of developing across platforms arise largely from different platforms having different operating systems; software for those platforms must be developed using different Software Development Kits and perhaps a different programming language. A multi-platform app store that permits a user to buy either

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<sup>19</sup> Athey written direct, ¶ 40.

an iOS or PC version of an app does not obviate the need for the developer of that software to create an iOS and PC version of that software.

**VIII. The But-For Worlds of Dr. Evans and Professor Athey Would Harm Competition between iOS and Other Platforms by Reducing Product Differentiation That Drives Competition**

98. Regardless of the particular relevant market found to be appropriate for analyzing the particular issues in this case, consumers benefit from the rivalry between iOS and Android mobile operating systems. From the perspective of my analysis, perhaps the most fundamental flaw in Professor Athey's analysis—and Dr. Evans's, for that matter—is their failure to recognize that it is the differentiation between the iOS and the Android platforms that drives the competition between them. The choices thereby offered to consumers are extremely valuable.
99. A key differentiator between these two platforms is Apple's approach, via the App Store and its policies and rules, to create a safe, secure, privacy-respecting, and highly usable experience for iOS users. Only Apple internalizes the health of the entire iOS platform, giving Apple uniquely strong incentives to manage the platform to maximize its value.
100. Professor Athey sees the differentiations between iOS and Android not as a source of value to consumers, but rather as creating switching costs that should be minimized. She proposes to reduce switching costs by removing Apple's power to protect the security, safety, privacy, and quality of experience of iOS users through its curation of the iOS apps that can be installed on the iPhone. Professor Athey's proposal to remove this key differentiator would reduce product differentiation between iOS and other platforms, and that product differentiation is itself a manifestation of the intense product-design competition between platforms. Consumers would be deprived of being able to choose a platform in which they are so protected. Thus, Professor Athey's proposal would reduce existing competition in the speculative hope of increasing competition in the future.
101. Similarly, Dr. Evans' proposals to allow sideloading and alternative third-party app stores—all of which are features of the Android platform—would also reduce the product differentiation between the iOS ecosystem and other platforms, thus reducing the competition between iOS and other platforms on a key dimension.
102. Consumers have the choice to select a mobile smartphone platform that takes a different approach than Apple. Many consumers exercise that option; many others choose Apple's platform. Apple's policies and rules for its App Store do nothing to dampen the viability of the alternative Android platform or deprive consumers of their option to choose that alternative platform. The but-for worlds of Dr. Evans and Professor Athey, on the other hand, would deprive all consumers of the option of choosing the platform where Apple takes responsibility for the safety, security, and privacy preservation of users.

**IX. There Are Serious Risks from Wrongly Condemning Procompetitive Behavior, Particularly in Technology Markets**

103. I would be the first to admit that competition law and economics is an inherently difficult subject, especially when it requires predictions about likely future behavior. Antitrust law



and policy often require predicting the implications of several alternative courses of actions, which can be prone to error for reasons including the lack of good data about the past and present and the absence of a reliable framework for evaluating the causal impact of legal rulings or policies. The latter is a particular risk when complicated conduct in technology markets is being evaluated.

104. There are serious economic risks from wrongly condemning procompetitive behavior, particularly in technology markets. Innovative business models can often raise antitrust concerns because (1) they are less well understood than long-standing business practices in fully mature industries, (2) we have less experience with them, there is a shorter track record of data about how they operate, and (3) their evaluation may require modes of economic analysis that are comparably novel and thus less mature and settled.
105. As a result, the harm caused by an erroneous condemnation of procompetitive behavior will, in many instances, be greater than the injury that may result from failing to condemn harmful behavior. This risk is especially concerning in dynamic technology markets, where erroneous condemnations can have long-lasting effects.
106. Apple's App Store policies and rules now have a 12-year track record of success and positive impact; there is little uncertainty about the general direction of their trajectory. However, there would necessarily be substantial uncertainty about the effects of Epic's desired injunctive relief. Given the high volumes and rapid growth of the app economy, an erroneous condemnation of Apple's App Store policies, regardless of the extent of the impact, could lead to significant foregone benefits.
107. Indeed, condemning Apple's platform policies could have a ripple effect and lead to condemnation of common and corresponding policies on other platforms, thereby amplifying the economic impact of a condemnation here. In addition, setting an erroneous precedent for the evaluation of platforms generally could chill innovation and investment in new platforms whose policies may also be called into question.
108. The success of the iOS ecosystem shows clearly that it is working. Epic nevertheless is asking the court to fix something that is not broken. Granting Epic's request would be risky for the entire app economy and the wider economy more generally.

#### **X. Oath**

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Respectfully submitted.



Daniel L. Rubinfeld, Ph.D.

April 23, 2021

Word count: 9168.